APKWS

Block II Demonstration Program

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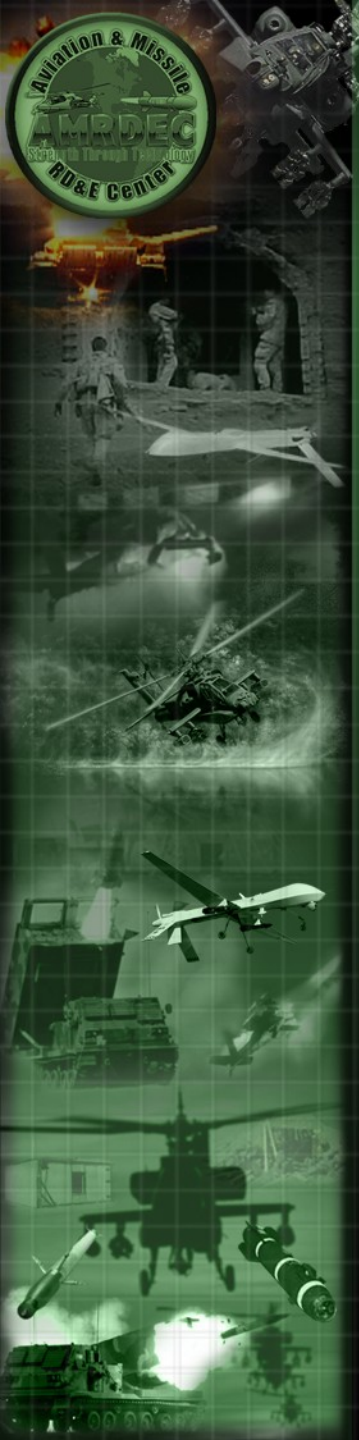

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Outline

- Current M151/M423 Performance & Deficiencies
- APKWS Warhead & Fuze Development Program
  - Technology Objectives
  - Key Performance Parameters
  - Target Set
  - Exit Criteria
- Risk Reduction Activities
- Summary

M151 Warhead / M423 Fuze Characteristics

- **Insensitive Munitions (IM) Performance**
  - **Bullet Impact: Deflagration**
  - **Fragment Impact: Detonation**
  - **Slow Cook Off: Detonation**
  - **Fast Cook Off: Detonation**
- **Naturally Fragmenting Case**
  - **Produces ~7500 fragments**
  - **Majority of Fragments are 0-1 grain**
  - **Limited Fragment Distribution Pattern**
- **Limited Target Set**
- **M423 Fuze**
  - **Single Safety (non MIL-STD-1316**

APKWS Block II Program Overview

- Follows Successful LCPK ATD Model for Transitioning Technology
- Multiple Contracts
- Must Meet Exit Criteria at End of Each Phase

Proposed APKWS Block II Objectives

Integrate Technologies to Replace the Current M151 and M423

- **Main Focus: Insensitive Munition Compliance**
  - **Improved MIL-STD-1316 Compliant Fuze**
  - **Improved Warhead and Fuze Performance**
- **Program Ends in FY05 with TRL 6 Prototype Designs and Supporting Test Data**

Expanded Target Set

MOUT / Non-Hardened Field Structures

MANPADS

Truck

IFV

APKWS Key Performance Parameters

Insensitive Munitions

- MIL-STD-2105B
  - Bullet Impact
  - Fragment Impact
  - FCO (Fast Cook-Off)
  - SCO (Slow Cook Off)

Fuze

- MIL-STD-1316 Compliant
- Multi-mode

Lethality

- MANPADS
- BMP-2 IFV
- Trucks
- MOUT
  - E&T Bunker
  - Brick over Block

Geometry

- Initial Warhead ICD to Be Maintained as M151
- Weight and CG Limits Are TBD by AMRDEC
  - Wind Tunnel Tests to Determine Growth Options

Cost

- Warhead and Fuze DTUPC Less Than $1,500
- Lower Is Better

Contractor Teams

GENERAL DYNAMICS
Ordnance and Tactical Systems
St. Petersburg, Florida

GENERAL DYNAMICS
Ordnance and Tactical Systems
Niceville, Florida

NAVSEA
WARFARE CENTERS

Warhead Development

Action

Fuze Development

ATK
ALLIANT TECHSYSTEMS

Warhead and Fuze Development

Exit Criteria

1. Insensitive Munitions (IM) Compliance
2. MIL-STD-1316 Fuze Safety Compliance
3. Lethality Considerations
4. Length, Weight, and CG Requirements
5. Compatible with Current Rocket & Launcher Interface
   - Must Support Guided and Unguided Configurations
   - Assumes a Front Mounted Warhead on Guided Round
6. AUPC under $1500
7. Low Technical Risk

APKWS Block II Inch-stones

- Contract Award, Mar 2004
- AFSRB Preliminary Review, Jun 2004
- PDR/Completion of Phase I, Jun 2004
- In-Process Review (IPR) #1, Oct 2005
- IM Board Review, Sept 2004
- AFSRB Status Review, Dec 2004
- CDR/Completion of Phase II, Feb & Apr 2005

APKWS Block II Warhead Test Efforts

Insensitive Munitions

- Bullet Impact
- Fragment Impact
- ✓ Fast Cook Off
- Slow Cook Off

Performance Tests

- ✓ Arena
- Water Capture

Penetration Tests

- Earth & Timber Bunker
- Brick Over Block

APKWS Block II Fuze Test Efforts

- ✓ Explosive Train Reliability/Component Output
- ✓ Out-of-Line Safety
- ✓ Progressive Arm
- ✓ Subverted Safety (Jolt, Jumble 1.5 m drop)
- ✓ Performance
  - 1st & 2nd Safety Features
  - Target Detection
- • Limited Environmental
- • Target Detection Sensor and Warhead Integration

APKWS Warhead / Fuze Program Summary

- Design for IM
- Enhanced Fragmentation
- Enhanced Blast
- Dual Safe, Multi-mode Fuze

Next Step: **APKWS Block II Warhead and Fuze Program Will Provide the Capability to Defeat the Current and Evolving Threat**